

Solar halos were also observed in following states and territories not included in the districts named above:

Arizona.—Prescott, 10th, 16th, 17th, 28th.

Colorado.—Colorado Springs, 23d.

Florida.—Key West, 25th; Pensacola, 26th, 29th.

Idaho.—Lewiston, 4th, 5th, 6th, 14th.

Kansas.—Yates Centre, 1st, 10th, 11th, 12th, 17th, 26th.

Mississippi.—Vicksburg, 2d, 3d, 17th, 18th, 26th, 30th.

Montana.—Fort Keogh, 19th; Terry's Landing, 19th, 20th.

Nevada.—Carson City, 25th.

Oregon.—Albany, 6th, 17th, 27th; Roseburg, 17th, 28th.

Texas.—Fort Davis, 16th; Rio Grande City, 19th.

Utah.—Salt Lake City, 16th, 18th, 28th.

Mr. B. B. Cutler, of Heath, Massachusetts, reports having observed a solar halo of very unusual character at that place on April 26th.

LUNAR HALOS.

Lunar halos have been observed in the various districts on the following dates:

New England.—13th, 14th, 17th to 20th, 26th.

Middle Atlantic states.—11th, 13th, 15th, 17th, 18th, 19th, 21st.

South Atlantic states.—6th, 11th, 14th, 15th, 18th, 19th, 21st, 23d.

Eastern Gulf.—12th, 14th, 17th, 18th.

Western Gulf.—13th, 14th, 16th, 17th, 22d, 23d, 24th.

Rio Grande valley.—14th, 15th, 16th.

Ohio valley and Tennessee.—12th, 14th, 17th to 20th.

Lower lakes.—11th to 15th, 18th to 21st, 25th, 26th.

Upper lakes.—2d, 10th, 11th, 12th, 14th, 16th to 20th, 22d, 23d, 24th.

Extreme northwest.—11th, 12th, 15th, 18th, 19th, 20th.

Upper Mississippi valley.—11th, 12th, 17th to 20th, 23d, 24th, 25th, 30th.

Missouri valley.—10th to 14th, 16th to 20th.

Northern slope.—12th, 13th, 16th to 19th, 22d.

Middle slope.—4th, 10th, 16th, 17th, 18th, 20th, 22d, 23d, 27th.

Southern plateau.—15th, 17th, 18th.

Northern plateau.—18th, 19th, 23d.

Middle Pacific.—10th 13th to 16th, 18th, 28th.

South Pacific.—8th, 14th, 15th, 17th, 23d.

Lunar halos were also observed in the following states and territories not included in the districts named above:

Florida.—Limona, 21st.

Nevada.—Carson City, 18th.

Oregon.—Albany, 20th; Portland, 18th.

Texas.—Fort Concho, 16th.

Utah.—Salt Lake City, 15th, 16th.

Mr. John H. Gibson, of Salina, Kansas, has forwarded an illustration of a very complete lunar halo, as observed by him at 7.30 p. m. of April 10th. He reports in connection with it: moon, three days old; temperature, 42°; barometer, (aneroid,) 28.50; wind, nw. and velocity two miles. The illustration shows the halo to have been of the class represented in Figure 85, page 216 of "Loomis' Treatise on Meteorology."

MIRAGE.

Wicklow, Dakota, 3d.—The village of Madison was plainly visible, which is ten miles distant and is hidden from view by the swell in the prairie. On the 9th, the country in the south-west beyond the horizon was plainly visible. Mirage similar to that observed on the 3d, was also seen on the 16th.

Duluth, Minnesota, 20th.—At 5.00 p. m., a fine mirage was observed, about eighteen miles distant on the southern shore of the lake. Three well-defined lakes, surrounded by and filled with islands, were distinctly seen through the telescope.

Mirage was also observed at the following stations:

Alexandria, Dakota, 6th, 7th, 19th, 26th.

West Bend, Iowa, 16th.

Northport, Michigan, 12th.

Traverse City, Michigan, 20th.

Pretty Prairie, Kan, 2d, 6th.

Indianola, Texas, 1st, 23d.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and seventy-three stations show 5,156 observations to have been made, of which twelve were reported doubtful; of the remainder, 5,144, there were 4,331, or 84.2 per cent., followed by the expected weather.

SUN SPOTS.

The following record of sun spots for the month of April, 1883, has been forwarded by Mr. D. P. Todd, Director of the Lawrence Observatory, Amherst, Massachusetts:—

| DATE— April, 1883. | No. of new | | Disappeared by solar rotation. | | Reappeared by solar rotation. | | Total No. visible. | | REMARKS. |
|-----------------------|------------|-------|--------------------------------------|-------|-------------------------------------|-------|-----------------------|-------|---|
| | Gr'ps | Spots | Gr'ps | Spots | Gr'ps | Spots | Gr'ps | Spots | |
| 1, 8 a. m. | 2 | 5 | 1 | 5 | 0 | 0 | 4 | 20† | One of spots very large. Do. Do. Do. |
| 3, 8 a. m. | 1 | 5 | 0 | 0 | 0 | 0 | 5 | 25† | |
| 4, 9 a. m. | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 30† | |
| 5, 8 a. m. | 1 | 5 | 0 | 0 | 0 | 0 | 7 | 35† | |
| 7, 5 p. m. | 1 | 5 | 2 | 5 | 0 | 0 | 5 | 30† | Many spots quite small. Do. Do. Do. |
| 8, 9 a. m. | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 30† | |
| 8, 2 p. m. | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 30† | |
| 10, 6 p. m. | 0 | 0 | 1 | 5 | 0 | 0 | 4 | 20† | |
| 12, 10 a. m. | 2 | 15† | 1 | 2 | 2 | 15† | 4 | 35† | Do. Do. Do. Do. |
| 13, 11 a. m. | 1 | 5 | 0 | 0 | 1 | 5 | 6 | 40† | |
| 14, 12 m. | 0 | 20† | 1 | 2 | 0 | 5 | 4 | 60† | |
| 15, 11 a. m. | 1 | 5 | 0 | 0 | 0 | 0 | 5 | 65† | |
| 15, 3 p. m. | 1 | 5 | 0 | 0 | 0 | 0 | 6 | 70† | Do. Do. Do. Do. |
| 15, 8 a. m. | 0 | 0 | 1 | 2 | 0 | 0 | 5 | 65† | |
| 19, 8 a. m. | 0 | 5 | 0 | 5 | 0 | 0 | 5 | 65† | |
| 19, 11 a. m. | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 65† | |
| 20, 5 p. m. | 0 | 0 | 1 | 10† | 0 | 0 | 4 | 55† | Do. Do. Do. Do. |
| 21, 10 a. m. | 1 | 2 | 0 | 0 | 1 | 2 | 5 | 55† | |
| 25, 12 m. | 3 | 15† | 0 | 0 | 0 | 0 | 5 | 55† | |
| 26, 3 p. m. | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 20† | |
| 27, 3 p. m. | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 15† | Do. Do. Do. Do. |
| 28, 3 p. m. | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 12 | |
| 28, 8 a. m. | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 10 | |
| 29, 5 p. m. | 0 | 0 | 2 | 3 | 0 | 0 | 4 | 10 | |
| 30, 11 a. m. | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8 | |

†Approximated. Faculae were seen at the time of every observation.

Mr. H. D. Govey, at North Lewisburg, Ohio, reports that sun spots were observed on all clear days during the month. They were most numerous on the 16th; least numerous on the 26th; largest on the 3d, and smallest on the 24th.

Lieutenant W. H. Smith, R. N. R., commanding the s. s. "Circassian," reports having observed sun spots between N. 42° 10', W. 52° 15', and N. 55° 02', W. 5° 41', from April 2d to 9th, as follows: 2d, one spot; 3d, one spot; 8th, two spots; 9th, two spots.

METEORS.

Visalia, California, 1st, 10th, 21st, 25th.

Wicklow, Dakota, 2d, 26th.

West Washington, District of Columbia, 8th.

Bethel, Connecticut, 10th.

Morrison, Illinois, 28th.

Davenport, Iowa, 8th, 23d.

Indianola, Iowa, 18th.

Clay Centre, Kansas, 9th.

Yates Centre, Kansas, 13th.

Woodstock, Maryland, 5th, 8th, 10th, 14th.

Boston, Massachusetts, 1st.

Cambridge, Massachusetts, 4th.

Charlestown, Massachusetts, 4th, 7th.

Rowe, Massachusetts, 3d, 8th.

Lansing, Michigan, 3d.

Swartz Creek, Michigan, 80th.

Brevard, North Carolina, 8th.

Stateburg, South Carolina, 18th, 19th.

The schooner "Jennie N. Huddell," at Hampton Roads, Virginia, observed a brilliant meteor at midnight of the 4th.

EARTHQUAKES.

San Francisco, California, 2d.—Two light shocks of earth-

quake were felt here at 8.50 a. m. of this date. The vibrations were from north to south.

The following report was published in the "New York Herald" of April 4, 1883:

"Catania, Sicily, April 3d.—A severe shock of earthquake has occurred at Riposto, and the oscillations still continue. Two light shocks have also been felt in this locality."

Cairo, Illinois, 12th.—A heavy shock of earthquake was felt at 2.36 a. m., lasting about thirty seconds. The vibrations were from south-southwest to north-northeast, and occurred at about the rate of three per second. An old frame house was shaken down, the inmates receiving slight injuries.

The following account of an earthquake in Finland is taken from "Nature," May 3, 1883:

On April 8, at 9 p. m., an earthquake was observed in Finland, where this phenomenon is extremely rare. At Nykarleby the shocks were rather severe, and were accompanied by a subterranean rattling and rumbling noise; their direction was from southwest to northeast. At Wasa the ground oscillated to an alarming extent. At Ytterjeppo, even the houses were shaken to their foundations and their downfall was feared; the same intensity in the shocks was observed on the "domaine" of Back.

SAND-STORMS.

Los Angeles, California, 12th.—A severe sand-storm occurred during the afternoon, during which the wind reached a velocity of forty-two miles per hour, and caused considerable damage.

Fresno, California, 20th.—The severest sand-storm that has visited this place for many years occurred about 1 p. m. of this date.

Sand-storms of less severity have been reported as follows:

Apache Pass, Arizona, 12th.

Fort Bowie, Arizona, 13th, 20th, 21st.

Fort Thomas, Arizona, 12th, 13th, 20th, 21st, 22d, 24th.

Tucson, Arizona, 10th, 13th, 14th, 15th, 19th, 21st.

Yuma, Arizona, 3d, 8th, 12th, 30th.

Los Angeles, California, 13th, 20th.

Visalia, California, 19th.

Fort Garland, Colorado, 4th, 9th, 12th, 13th, 20th.

West Las Animas, Colorado, 9th, 20th.

Crete, Nebraska, 8th, 10th, 13th, 20th, 21st.

Fort Cummings, New Mexico, 13th, 20th.

Fort Union, New Mexico, 9th to 13th, 15th, 16th.

Santa Fé, New Mexico, 4th, 12th, 20th.

El Paso, Texas, 13th, 20th, 21st, 22d.

POLAR BANDS.

Texas Hill, Arkansas, 2d, 19th, 20th, 25th.

Cape Mendocino, California, 13th, 16th, 17th, 24th, 26th, 28th.

Alexandria, Dakota, 24th.

Wicklów, Dakota, 19th, 23d, 24th.

Riley, Illinois, 20th, 24th.

Pretty Prairie, Kansas, 15th.

Yates Centre, Kansas, 1st, 16th, 20th, 21st, 29th.

Shreveport, Louisiana, 27th.

Heath, Massachusetts, 3d.

Clear Creek, Nebraska, 17.

Freehold, New Jersey, 21st.

Vineland, New Jersey, 17th, 30th.

Block Island, Rhode Island, 2d.

Charleston, South Carolina, 1st.

Nashville, Tennessee, 3d, 4th, 6th, 26th, 27th.

Wytheville, Virginia, 17th.

ZODIACAL LIGHT.

Prescott, Arizona, 1st, 2d, 6th, 8th, 23d to 30th.

Mount Forest, Canada, 16th, 20th.

Wicklów, Dakota, observed, 2d, 3d, 4th, 5th; suspected, 7th.

Pensacola, Florida, 25th.

Wabash, Indiana, 29th.

Cresco, Iowa, 1st.

Salina, Kansas, 8th, 30th.

Elk Falls, Kansas, 13th.

Cambridge, Massachusetts, visible, 1st, 2d, 4th, 6th, 8th, 25th, 29th, 30th; suspected, 10th.

Dudley, Massachusetts, 20th, 24th.

Rowe, Massachusetts, 3d, 8th.

Somerset, Massachusetts, 2d, 6th, 8th.

Clear Creek, Nebraska, 7th.

Wauseon, Ohio, 1st, 2d, 7th, 8th, 9th, 17th, 25th, 28th, 29th.

Nashville, Tennessee, 3d, 7th, 24th to 30th.

Palestine, Texas, 10th, 19th, 22d, 23d, 25th.

Variety Mills, Virginia, 3d, 4th, 5th, 25th.

Wytheville, Virginia, 3d, 4th, 7th.

PRAIRIE AND FOREST FIRES.

Wahoo, Saunders county, Nebraska, 8th.—A serious fire broke out in the Richland precinct on this date, destroying considerable property.

Pike's Peak, Colorado, fire in southeast on 2d.

West Las Animas, Colorado, 9th.

Fort Stevenson, Dakota, 23d, 27th, 30th.

Fort Yates, Dakota, 5th, 7th, 8th, 9th, 10th, 16th.

Huron, Dakota, 5th, 6th, 8th, 16th, 19th.

Yankton, Dakota, 6th, 7th, 9th, 20th, 24th, 26th, 27th.

Alexandria, Dakota, 8th, 12th, 17th, 18th, 20th, 24th, 25th, 27th, 29th, 30th.

Fort Supply, Indian Territory, 10th, 13th.

Humboldt, Iowa, 3d, 9th.

Independence, Kansas, 1st to 30th.

Saint Vincent, Minnesota, 21st, 22d, 23d.

Fort Custer, Montana, 16th.

Fort Assiniboine, Montana, 27th, 28th.

De Sota, Nebraska, 3d, 8th, 9th.

Genoa, Nebraska, 8th, 13th, 19th.

North Platte, Nebraska, 7th, 19th.

Omaha, Nebraska, 8th, 9th, 26th.

Santa Fé, New Mexico, 2d.

Coleman City, Texas, 9th.

DROUGHT.

Thornville, Michigan, 30th.—The cold and dry weather of April has been very unfavorable to the wheat crop in this section.

Archie, Missouri, 30th.—The wheat crop in this vicinity is suffering from drought.

MIGRATION OF BIRDS.

Geese flying northward.—Fort Hale, Dakota, 3d; Alexandria, Dakota, 3d, 26th, 27th; Guttenburg, Iowa, 1st, 2d, 6th, 8th; Monticello, Iowa, 4th; Indianola, Iowa, 2d; Independence, Kansas, 1st, 11th; Clay Centre, Kansas, 1st, 16th; Fort Scott, Kansas, 2d; Pretty Prairie, Kansas, 6th; Yates Centre, Kansas, 9th; Somerset, Massachusetts, 9th; Clear Creek, Nebraska, 20th; North Platte, Nebraska, 7th; Palermo, New York, 4th; Albany, Oregon, 21st, 26th, 27th; Wellsboro', Pennsylvania, 4th; Randolph, Vermont, 4th; Embarras, Wisconsin, 24th, 27th, 28th; Franklin, Wisconsin, 30th; Bangor, Maine, 8th; Point Judith, Rhode Island, 4th, 5th, 6th, 9th, 21st; Narragansett Pier, Rhode Island, 5th, 11th, 12th; New Haven, Connecticut, 5th; Eastport, Maine, 8th, 22d; Kittyhawk, North Carolina, 6th; Oswego, New York, 10th; Rochester, New York, 8th; Escanaba, Michigan, 28th; Fort Stevenson, Dakota, 7th; Huron, Dakota, 3d, 17th, 26th; Omaha, Nebraska, 1st; Fort Custer, Montana, 8th; Fort Reno, Indian Territory, 6th; Cape Mendocino, California, 12th; Red Bluff, California, 24th, 25th, 26th. *Flying southward.*—Fort Lapwai, Idaho, 15th; Wicklów, Dakota, 1st to 7th, 16th. *Flying westward.*—Clay Centre, Kansas, 17th.

Ducks flying northward.—Alexandria, Dakota, 3d, 4th; Huron, Dakota, 3d; Saint Vincent, Minnesota, 2d, 8th; Dubuque, Iowa, 6th, 7th, 8th, 9th; Monticello, Iowa, 4th; Mackinaw City, Michigan, 17th; Manitowoc, Wisconsin, 5th; Chambersburg, Pennsylvania, 7th, 26th. *Flying southward.*—Wicklów, Dakota, 3d to 7th.

Brants flying northward.—Indianola, Iowa, 7th; Pretty Prairie, Kansas, 6th. *Flying southward.*—Wicklów, Dakota, 8th, 15th, 16th; Indianola, Iowa, 9th.

Cranes flying northward.—Pretty Prairie, Kansas, 6th; Indianola, Iowa, 2d, 8th; Guttenburg, Iowa, 8th; Palermo, New York, first appearance, 7th. *Flying southward.*—Wicklow, Dakota, 18th, 20th.

NOTES AND EXTRACTS.

The following extract is taken from the report of the Illinois Meteorological Service:

SEASON.

April was a cold and, in many portions of the state, a dry month. Vegetation made but little growth during the past month, and is three weeks behind average seasons. The cool weather has been favorable for work-animals, and the labor of seeding is well advanced.

TEMPERATURE.

The mean temperature of April for six years in the several divisions of the state is as follows:

| Division. | 1878. | 1879. | 1880. | 1881. | 1882. | 1883. |
|----------------|-------|-------|-------|-------|-------|-------|
| Northern | 53.00 | 46.00 | 49.00 | 40.80 | 48.55 | 48.13 |
| Central | 58.00 | 51.00 | 52.00 | 45.20 | 53.44 | 53.18 |
| Southern | 60.00 | 55.00 | 57.00 | 53.30 | 58.55 | 57.40 |
| Average | 57.00 | 51.00 | 53.00 | 46.43 | 53.51 | 52.90 |

It will be seen from the foregoing table that the mean temperature of the past month is lower than that for April, 1882.

With the exception of April, 1879, and 1881, the past month was the coldest April since 1877 in the northern division of the state.

The mean temperature from January 1st to April 30th, 1883, was lower than for corresponding months in the preceding five years in this division.

The mean temperature in 1878, 1880, and 1882, to April 30th, was about 10° warmer than for the corresponding period of the present year in the northern portion of the state.

In April, 1883, the mean temperature in the central counties was lower than in April 1878 and 1882, and higher than for the same month in 1879, 1880, and 1881.

The mean temperature for the first four months in 1883, with the exception of the same period in 1881, is lower in the central portion of the state than for the corresponding period in any year since 1877.

The mean temperature for April, 1883, in the southern division of the state was lower than in April, 1878 and 1882, and higher than for the same month in 1879, 1880, and 1881.

From January 1st to April 30th, 1883, the mean temperature in the southern counties was lower than for any like period since 1877, with the exception of 1881.

RAINFALL.

The average monthly rainfall, including melted snow, for the past six Aprils, is as follows:

| Division. | 1878. | 1879. | 1880. | 1881. | 1882. | 1883. |
|----------------|-------|-------|-------|-------|-------|-------|
| Northern | 3.72 | 2.13 | 4.29 | 1.81 | 4.55 | 3.26 |
| Central | 3.63 | 1.99 | 4.29 | 1.89 | 4.14 | 4.66 |
| Southern | 5.20 | 2.41 | 3.22 | 4.11 | 2.84 | 4.59 |
| Average | 4.18 | 2.18 | 3.93 | 2.60 | 3.84 | 4.17 |

The mean precipitation for the state in April, 1883, of 4.17 inches, exceeds that of the same month in any year since 1878.

The precipitation in the northern counties for April, 1883, of 3.26 inches, is less than the rainfall of corresponding month in 1878, 1880, and 1882.

The average monthly precipitation in these (the northern) counties for the first four months of 1883, of 2.57 inches, is less than that of the corresponding period since 1879.

The rainfall in April, 1883, of 4.66 inches in the central counties largely exceeds that of the same month since 1877.

The average monthly rainfall in the central division from January 1st to April 30th, 1883, was 3.45 inches—the lowest average for a like period for the past six years, with the exception of the corresponding months of 1881 and 1882.

The rainfall in the southern portion of the state in April, 1883, of 4.59 inches, largely exceeds that of any corresponding month since 1878.

The average monthly rainfall of 4.43 inches for the first four months of 1883, is more than for a like period since 1877, with the exception of 1882.

Dr. Gustavus Hinrichs, Director of the Iowa Weather Service, has forwarded an advance proof of his interesting report for the month of April, 1881, which is as follows:

IOWA WEATHER BULLETIN, FOR APRIL, 1883.

April, 1883, was rather warm, but otherwise nearly normal.

The mean temperature of the air was not quite two degrees above normal; the middle decade being seven degrees above, and the last decade being two and a half degrees below normal.

The amount of precipitation was nearly normal, diminishing from over three inches in the southeast and the lower Des Moines valley, to but little over one inch in the northeast and the northwest. The principal days with precipitation were the 4th and 5th, the 13th and 14th, and the 22d. But very little snow fell. The month was more windy than usual, the total run of the wind exceeding the normal value nearly twenty per cent. Our state was almost free from whirlwinds during April; only a very limited tornado ran up the Maple river valley on the evening of the 22d, the date of the exceedingly destructive whirlwind of Beauregard and Wesson in Mississippi.

During the severe thunder-storms of the 4th, 13th, and 22d hail has fallen and lightning has done damage to buildings, stacks, and stock.

Halos were seen, especially from the 17th to the 19th, preceding the cold weather of the last decade. The zodiacal light was observed but a few times. The northern light was very generally observed on the 24th throughout the eastern half of Iowa, and was also seen on the 19th.

On the whole, the weather during April has been remarkably favorable for all farm and garden work, and our spring is making promise of a fruitful year. May is probably going to be normal or somewhat below, and the summer promises to be a warm one; if these indications shall be realized, the harvest will be abundant.

GUSTAVUS HINRICHs.

CENTRAL STATION, I. W. S., May 7, 1883.

The damage to orchards is largely limited to the more treeless region of central Iowa; in many parts of the state the fruit-buds are quite healthy.

To prevent damage from late frosts, the twigs cut off in pruning should be heaped mainly at the corners of the orchard, and be set to burn so as to envelope the orchard in smoke on the approach of a cold night; so far as the smoke covers the bloom, no damage from frost will be sustained.

Severe night frosts may occur as as the 25th of May. They are especially to be looked for between the 10th and 15th, that is about the 12th. They are again to be feared about the 22d. If the 25th has been safely passed, the fruit bloom has escaped the most sweeping destruction to which it is liable.

Mr. W. Earle Cass, Director of the New Jersey Weather Service, has forwarded the following meteorological summary for the month of April 1883:

| Stations. | Temperature. | | | Rainfall. |
|---------------------------------|--------------|------|-------|-----------|
| | Max. | Min. | Mean. | |
| Rockland Lake, New York..... | o | o | o | 3.01 |
| Cape May Point, New Jersey..... | 62.5 | 29.0 | 48.1 | 4.69 |
| Somerville, New Jersey..... | 69.9 | 30.0 | 49.8 | 3.07 |
| Atlantic City, New Jersey..... | 63.0 | 27.0 | 45.5 | 4.31 |
| Sandy Hook, New Jersey..... | 68.0 | 27.0 | 46.6 | 5.79 |
| Newton, New Jersey..... | 70.2 | 19.8 | 47.6 | 3.93 |
| New York City, New York..... | 70.0 | 26.5 | 46.6 | 3.82 |
| Port Jervis, New York..... | 65.0 | 23.0 | 44.2 | 3.87 |
| New Brunswick, New Jersey..... | 68.0 | 24.5 | | 4.53 |
| Lambertville, New Jersey..... | | | | 2.81 |
| Newark, New Jersey..... | 71.0 | 23.5 | 47.5 | 4.64 |
| Barneget City, New Jersey..... | 61.3 | 32.0 | 46.0 | 3.93 |
| Fallsington, Pennsylvania..... | 72.0 | 32.0 | 48.3 | 3.88 |
| Belvidere, New Jersey..... | | | | 2.79 |
| Princeton, New Jersey..... | 67.8 | 22.3 | 46.2 | 2.46 |
| Philadelphia, Pennsylvania..... | 72.0 | 27.0 | 50.0 | 2.44 |
| Vinland, New Jersey..... | 80.0 | 20.0 | 49.2 | 3.96 |
| Caldwell, New Jersey..... | | | | 5.38 |
| Freehold, New Jersey..... | 70.0 | 24.0 | 44.9 | 3.98 |
| Atlantic City, New Jersey..... | 61.0 | 11.0 | 35.0 | 3.09 |

The Missouri Weather Service, under direction of Professor Francis E. Nipher, has issued the following report for April, 1883:

MISSOURI WEATHER SERVICE; APRIL, 1883.

The average temperature of April has been 56° 7 at Saint Louis, which is about half a degree above the normal of Englemann's series. Since 1837 the mean April temperature has once reached 66° 8—in 1844—and in 1857 it fell to 44° 1, a range of 22° 7. The extremes during the last month have been 32° 2, on the 24th, and 85° 6, on the 14th, which are very ordinary temperatures. In April, 1857, the lowest daily minimum was 18° 0; while in the years 1838, 1843, and 1855 the highest maximum reached was 93° 0.

In the state, the maximum temperature has been the highest in the central part, Glasgow reporting 93° 0. Miami 92° 0; while at Cairo, Illinois, the highest temperature reached was 84° 5, that at Keokuk being 85° 0. The lowest minimum reported was 22° 0 at Centerville, and twelve stations out of twenty-one reported the minimum as 32° 0, or below.

The rainfall at the central station has been 2.62 inches, the normal rainfall being 3.70 inches. At the Saint Louis water-works, however, the rainfall has been 3.87 inches.

The rainfall has been heaviest, or more than 5.00 inches, in the extreme southeastern part of the state. In the central western part, and in a narrow belt extending therefrom to Macon and Shelby, the fall has been less than 1.00 inch, while in the north the fall has been over 2.00 inches.

At 4.00 p. m., on the 14th, a severe local storm, which was apparently an incipient tornado, did considerable damage at Hannibal. Its track was about three hundred feet wide. Similar storms with hail were observed seven miles west and ten miles north of Mexico. A small tornado having